Journal of Optical Technology (A Translation of Opticheskii Zhurnal) 2012 vol.79 N4, pages 220-225

Diagnostic complex for the modelling and experimental investigation of the spectral and gas-dynamic characteristics of an inductively coupled plasma

Nagulin K., Ibragimov R., Zivilskii I., Gilmutdinov A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

A diagnostic complex has been developed for the modelling and experimental investigation of the gas-dynamic and spectral characteristics of an inductively coupled plasma. This complex includes a four-dimensional computer model of plasma, a research plasma generator, a schlieren system for visualizing the spatial structure of gas flows in the torch, and a high-resolution spectrometer for obtaining information on the temperature in the discharge zone from the intensity of the emission spectra. The model adequately maps the gas-flow dynamics in the torch with no discharge ignited in the inductively coupled plasma. The results of the calculations agree well with the experimental data. © 2012 Optical Society of America.

http://dx.doi.org/10.1364/JOT.79.000220